REMARKS

Reconsideration and allowance are respectfully requested. Claims 1, 3-6, 11-12 and 14-24 are pending. Claims 2, 7-10 and 13 are cancelled without any disclaimer of the subject matter contained therein. No new matter has been added.

Information Disclosure Statement

Applicants appreciate the Examiner's consideration of the references cited in the Information Disclosure Statement (IDS) filed on March 29, 2007.

Regarding the IDS filed on July 11, 2008, the Examiner states that the IDS filed on July 11, 2008 fails to comply with 37 C.F.R. 1.98(a)(3). More specifically, the Examiner asserts that DE 197 11 693 and the German Office Actions dated July 8, 2003 and June 11, 2008 lack a concise statement of relevance and, therefore, have not been considered.

On page 2 of the IDS filed on July 11, 2008, Applicants provided the following:

> For the Examiner's convenience, we attach hereto U.S. Patent Publication No. 5,877,337 which corresponds to German Publication Number 197 11 693. Submission of the English language equivalent is deemed to satisfy the requirement for a concise explanation of relevancy.

Accordingly, Applicants did indeed provide a concise statement of relevance for DE 197 11 693. Moreover, the German Office Actions dated July 8, 2003 and June 11, 2008 were cited to provide an explanation of relevance, as disclosed on page 2 of the IDS filed on July 11, 2008. Applicants have attached hereto the IDS and PTO 1449 Form filed on July 11, 2008 for the Examiner's convenience.

Therefore, Applicants respectfully request that the Examiner acknowledge consideration of DE 197 11 693 and the German Office Actions dated July 8, 2003 and June 11, 2008 in the next U.S.P.TO. communication.

Priority

All certified copies of the priority documents have been received.

Drawings

The drawings filed on September 23, 2003 have been accepted by the Examiner.

Claim Objections

Claims 14-15, 22 and 24 stand objected to because of informalities. More specifically, the Examiner objects to claims 14-15, 22 and 24 because they recite "CT" without disclosing of what CT is an abbreviation. Accordingly, Applicants have amended claims 14, 22 and 24 to recite "computed tomography" in the first recitation of "CT," of each of claims 14, 22 and 24.

Moreover, claim 24 is objected to because the Examiner asserts that claim 24 is a substantial duplication of claim 21. Applicants respectfully traverse the objection for the following reasons.

MPEP § 706.03(k) states that "court decisions have confirmed applicant's right to restate (i.e., by plural claiming) the invention in a reasonable number of ways. Indeed, a mere difference in scope between claims has been held to be enough." Since claim 21 recites "An apparatus operable to perform the method of claim 1" and claim 24 recites "A computed tomography (CT) device operable to perform the method of claim 1," claims 21 and 24 are of different scope.

Therefore, Applicants respectfully request that the Examiner withdraw the objections to claims 14-15, 22 and 24.

Rejections under 35 U.S.C. § 103[1]

1. Claims 1-4, 9, 13-16, 19, 21-22 and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tam (US 5,881,123), hereinafter "'123 Tam," in view of Tam et al. ("Exact (Spiral + Circles) Scan Region-of-Interest Cone Beam Reconstruction", 2000, IEEE Transactions on Medical Imaging, Volume 19, Number 5, pp. 376-383), hereinafter "the Tam article." Applicants traverse this rejection for the following reasons.

Claim 1 requires, *inter alia*, "a weighting function representing a smooth function of the row number, the weighting function having a value of one for rays to at least one centrally located detector row and tending to zero for rays to detector rows at an edge of the detector rows."[2] At least this feature is not disclosed or suggested by '123 Tam, the Tam article or a combination of the two (assuming they could be properly combined, which Applicants do not admit).

'123 Tam discloses a simplified cone beam image reconstruction. However, '123 Tam fails to disclose or suggest "a weighting function representing a smooth function of the row number, the weighting function having a value of one for rays to at least one centrally located detector row and tending to zero for rays to detector rows at an edge of the detector rows."

The Tam article discloses a scan cone beam reconstruction algorithm wherein projection data is weighted. However, the weighting is not "a weighting function

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[1] To be thorough, further expedite prosecution, and for the sake of clarity, Applicants provide discussions of each of the references separately, however, Applicants are not attacking these references individually, but arguing that the references, even taken in combination, fail to render the claimed invention obvious because all features of the claims are not found in the prior art.

[2] This feature was originally recited in claim 10. The subject matter of claim 10 has been incorporated into claim 1. On page 18, the Examiner relies on Grass et al. ("3D Cone-beam CT Reconstruction for Circular Trajectories", 2000, Physics in Medicine and Biology, Volume 45, pp. 329-347), hereinafter "Grass," to teach the "weighting function." Therefore, Grass will be discussed under the rejection of claims 1-5, 9, 11, 13-15, 18-19, 21-22 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Proksa et al. (US 6,285,733) in view of Grass.

representing a smooth function of the row number, the weighting function having a value of one for rays to at least one centrally located detector row and tending to zero for rays to detector rows at an edge of the detector row," as required by claim 1.

Therefore, '123 Tam and the Tam article fail to render claim 1 obvious, either alone or in combination (assuming they could be properly combined, which Applicants to not admit). Claims 3-4, 16, 19, 21-22 and 24, are patentable based at least upon their dependency on claim 1.

Claim 14 is a separate independent claim from claim 1, wherein each independent claim contains its own individual limitations. Each independent claim should be interpreted solely based upon limitations set forth therein. However, claim 14 is patentable for at least reasons somewhat similar to those set forth above regarding claim 1. Claim 15 is patentable based at least upon its dependency on claim 14.

Claims 2, 9 and 13 have been cancelled without any disclaimer, thereby rendering the rejection of claims 2, 9 and 13 moot.

For at least the foregoing reasons, Applicants respectfully request that the Examiner withdraw the rejection of claims 1-4, 9, 13-16, 19, 21-22 and 24 under 35 U.S.C. § 103.

2. Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over '123 Tam in view of the Tam article and Proksa (US 2001/0021032).

The Examiner correctly acknowledges that the features of claim 12 are absent from '123 Tam and the Tam article, but alleges that these features are taught by Proksa, thereby rendering claim 12 obvious to one of ordinary skill at the time of the invention. Even assuming *arguendo* that the features of claim 12 are taught by Proksa (which Applicants do not admit) and that Proksa could be properly combined

with '123 Tam and the Tam article (which Applicants do not admit), '123 Tam, the Tam article and Proksa are still deficient with respect to the above-described features of claim 1. Thus, even in combination, '123 Tam, the Tam article and Proksa fail to render claim 12 obvious.

3. Claims 20 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over '123 Tam in view of the Tam article and Hsieh (US 6,529,575).

The Examiner correctly acknowledges that the features of claims 20 and 23 are absent from '123 Tam and the Tam article, but alleges that these features are taught by Hsieh, thereby rendering claims 20 and 23 obvious to one of ordinary skill at the time of the invention. Even assuming *arguendo* that the features of claims 20 and 23 are taught by Hsieh (which Applicants do not admit) and that Hsieh could be properly combined with '123 Tam and the Tam article (which Applicants do not admit), '123 Tam, the Tam article and Hsieh are still deficient with respect to the above-described features of claim 1. Thus, even in combination, '123 Tam, the Tam article and Hsieh fail to render claims 20 and 23 obvious.

4. Claims 1-5, 9, 11, 13-15, 18-19, 21-22 and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Proksa et al. (US 6,285,733) in view of Grass et al. ("3D Cone-beam CT Reconstruction for Circular Trajectories", 2000, Physics in Medicine and Biology, Volume 45, pp. 329-347), hereinafter "Grass." Applicants traverse this rejection for the following reasons.

Claim 1 requires, *inter alia*, "a weighting function representing a smooth function of the row number, the weighting function having a value of one for rays to at least one centrally located detector row and tending to zero for rays to detector rows at an edge of the detector rows." At least this feature is not disclosed or suggested by

Proksa et al., Grass or a combination of the two (assuming they could be properly combined, which Applicants do not admit).

Proksa et al. discloses a computed tomography method. However, as admitted by the Examiner on page 10 of the Office Action dated June 26, 2009, "Proksa et al. fails to explicitly disclose ...the rays are weighted as a function of corresponding position in the beam." Instead, the Examiner relies on Grass to teach the "weighting function" of claim 1.[3]

Grass discloses a 3D cone-beam CT reconstruction including fan-beam to parallel-beam rebinning. As provided on page 332 of Grass, the rebinning "consists of two separate rebinning steps. The first one is applied to ensure the condition $\Phi = \alpha + \beta$. The second one is applied to yield an equidistant sampling in the resulting parallel projections in the row direction." The data that does not satisfy the first step is not measured.

The Examiner relies on Grass to teach the "weighting function" of claim 1 (originally recited in claim 10). However, the first step of the rebinning process in Grass requires a determination of whether data should or should not be used. Accordingly, the rebinning process of Grass does not represent "a smooth function" and move from a value of one to a value near zero, as required by claim 1. By contrast, Grass first determines whether data should or should not be used.

Therefore, Grass fails to disclose or suggest the "weighting function representing a smooth function of the row number, the weighting function having a value of one for rays to at least one centrally located detector row and tending to zero for rays to detector rows at an edge of the detector rows," as recited in claim 1.

[3] Non-final Office Action, U.S. Patent Appl. No. 10/667,475, U.S. Patent and Trademark Office, p. 18 (June 26, 2009) (rejection of claim 10).

Consequently, Proksa et al. and Grass fail to render claim 1 obvious, either alone or in combination (assuming they could be properly combined, which Applicants do not admit). Claims 3-5, 11, 18-19, 21-22 and 24, are patentable based at least upon their dependency on claim 1.

Claim 14 is a separate independent claim from claim 1, wherein each independent claim contains its own individual limitations. Each independent claim should be interpreted solely based upon limitations set forth therein. However, claim 14 is patentable for at least reasons somewhat similar to those set forth above regarding claim 1. Claim 15 is patentable based at least upon its dependency on claim 14.

Claims 2, 9 and 13 have been cancelled without any disclaimer, thereby rendering the rejection of claims 2, 9 and 13 moot.

For at least the foregoing reasons, Applicants respectfully request that the Examiner withdraw the rejection of claims 1-5, 9, 11, 13-15, 18-19, 21-22 and 24 under 35 U.S.C. § 103.

5. Claims 20 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Proksa et al. in view of Grass and Hsieh.

The Examiner correctly acknowledges that the features of claims 20 and 23 are absent from Proksa et al. and Grass, but alleges that these features are taught by Hsieh, thereby rendering claims 20 and 23 obvious to one of ordinary skill at the time of the invention. Even assuming *arguendo* that the features of claims 20 and 23 are taught by Hsieh (which Applicants do not admit) and that Hsieh could be properly combined with Proksa et al. and Grass (which Applicants do not admit), Proksa et al., Grass and Hsieh are still deficient with respect to the above-described features of

claim 1. Thus, even in combination, Proksa et al., Grass and Hsieh fail to render claims 20 and 23 obvious.

6. Claims 6-8, 10 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Proksa et al. in view of Grass and Bruder et al. ("Performance of Approximate cone-beam reconstruction in multi-slice computed tomography", 2000, SPIE, Volume 3979, pp. 541-553), hereinafter "Bruder."

The Examiner correctly acknowledges that the features of claims 6 and 17 are absent from Proksa et al. and Grass, but alleges that these features are taught by Bruder, thereby rendering claims 6 and 17 obvious to one of ordinary skill at the time of the invention. Even assuming *arguendo* that the features of claims 6 and 17 are taught by Bruder (which Applicants do not admit) and that Bruder could be properly combined with Proksa et al. and Grass (which Applicants do not admit), Proksa et al., Grass and Bruder are still deficient with respect to the above-described features of claim 1. Thus, even in combination, Proksa et al., Grass and Bruder fail to render claims 6 and 17 obvious.

Claims 7-8 and 10 have been cancelled without any disclaimer of the subject matter contained therein, thereby rendering the rejection of claims 7-8 and 10 moot.

Double Patenting

1. Claims 1-2, 4-8, 11-15 and 19 stand rejected on the ground of nonstatutory obviouness-type double patenting as being unpatentable over claims 1-6 and 11 of U.S. Patent No. 6,839,400.

Claim 1 requires, *inter alia*, "a weighting function representing a smooth function of the row number, the weighting function having a value of one for rays to at least one centrally located detector row and tending to zero for rays to detector rows at

an edge of the detector rows." As claims 1-6 and 11 of U.S. Patent No. 6,839,400 do not disclose or suggest the above-identified feature of claim 1 of the present application, Applicants respectfully request that the Examiner withdraw the double patenting rejection of claim 1. Claims 2, 4-6, 11-12 and 19 are patentable based at least upon their dependency on claim 1.

Claim 14 is a separate independent claim from claim 1, wherein each independent claim contains its own individual limitations. Each independent claim should be interpreted solely based upon limitations set forth therein. However, claim 14 is patentable for at least reasons somewhat similar to those set forth above regarding claim 1. Claim 15 is patentable based at least upon its dependency on claim 14.

Claims 7-8 and 13 have been cancelled without any disclaimer of the subject matter contained therein, thereby rendering this rejection moot.

For at least the foregoing reasons, Applicants respectfully request that the Examiner withdraw the double patenting rejection of claims 1-2, 4-8, 11-15 and 19.

2. Claims 14, 21-22 and 24 stand rejected on the ground of nonstatutory obviouness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,839,400 in view of Proksa et al.

As shown above, U.S. Patent No. 6,839,400 fails to disclose or suggest "a weighting function representing a smooth function of the row number, the weighting function having a value of one for rays to at least one centrally located detector row and tending to zero for rays to detector rows at an edge of the detector rows," as recited in claim 14. Applicants submit that Proksa et al. fails to cure the deficiencies of U.S. Patent No. 6,839,400, even if Proksa et al. and U.S. Patent No. 6,839,400 could

be properly combined (which Applicants do not admit). Therefore, U.S. Patent No. 6,839,400 and Proksa et al. fail to render claim 14 obvious.

The Examiner correctly acknowledges that the features of claims 21-22 and 24 are absent from U.S. Patent No. 6,839,400, but alleges that these features are taught by Proksa et al., thereby rendering claims 21-22 and 24 obvious to one of ordinary skill at the time of the invention. Even assuming *arguendo* that the features of claims 21-22 and 24 are taught by Proksa et al. (which Applicants do not admit) and that Proksa et al. could be properly combined with U.S. Patent No. 6,839,400 (which Applicants do not admit), U.S. Patent No. 6,839,400 and Proksa et al. are still deficient with respect to the above-described features of claim 1. Thus, even in combination, U.S. Patent No. 6,839,400 and Proksa et al. fail to render claims 21-22 and 24 obvious.

For at least the foregoing reasons, Applicants respectfully request that the Examiner withdraw the double patenting rejection of claims 14, 21-22 and 24.

CONCLUSION

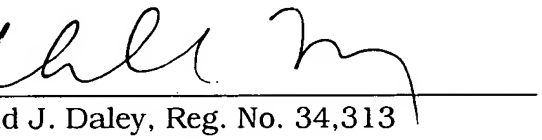
Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1, 3-6, 11-12 and 14-24 in connection with the present application is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Donald J. Daley at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. §1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By 
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Attachment: Information Disclosure Statement filed on July 11, 2008
PTO 1449 Form